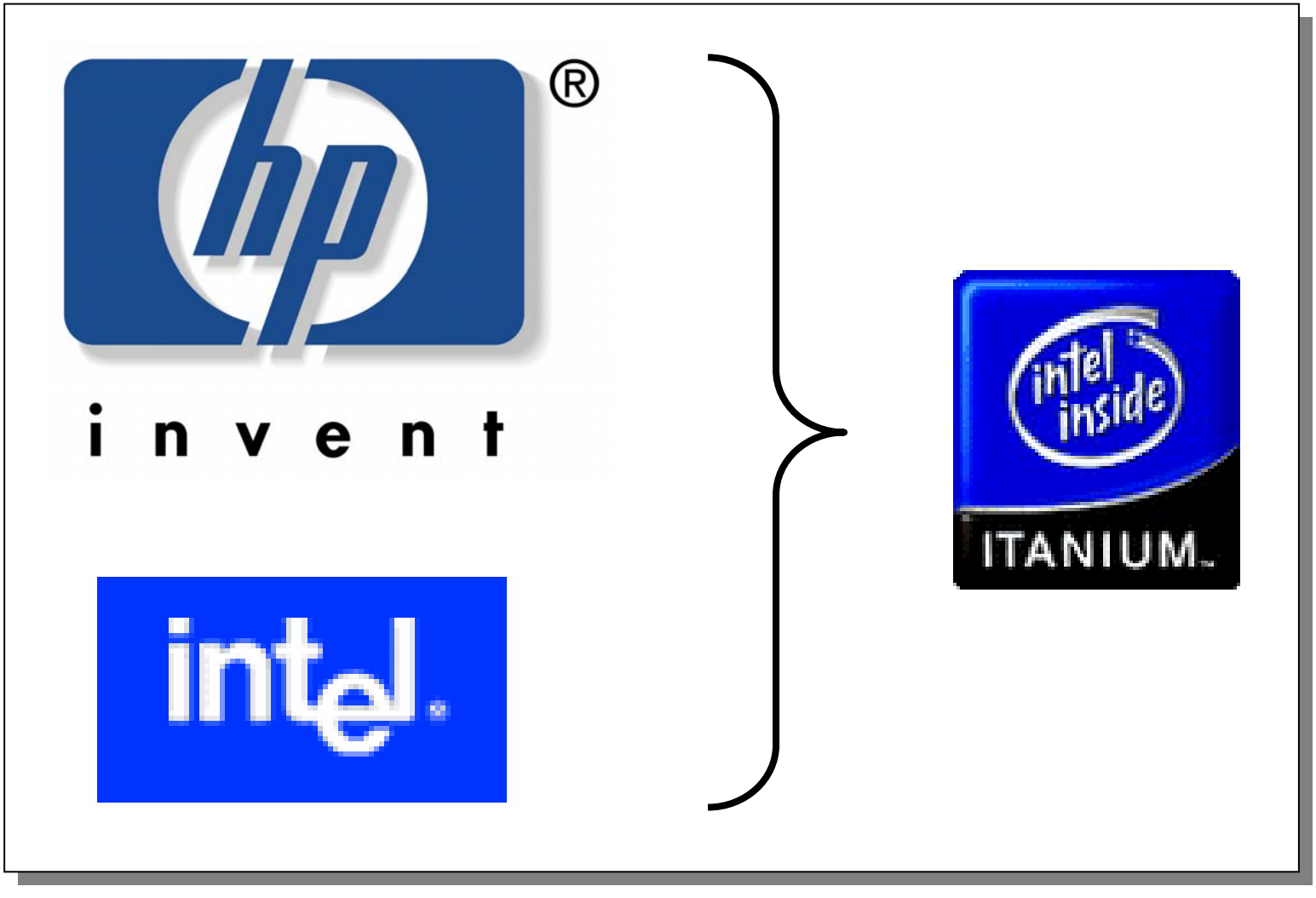

hp
invent

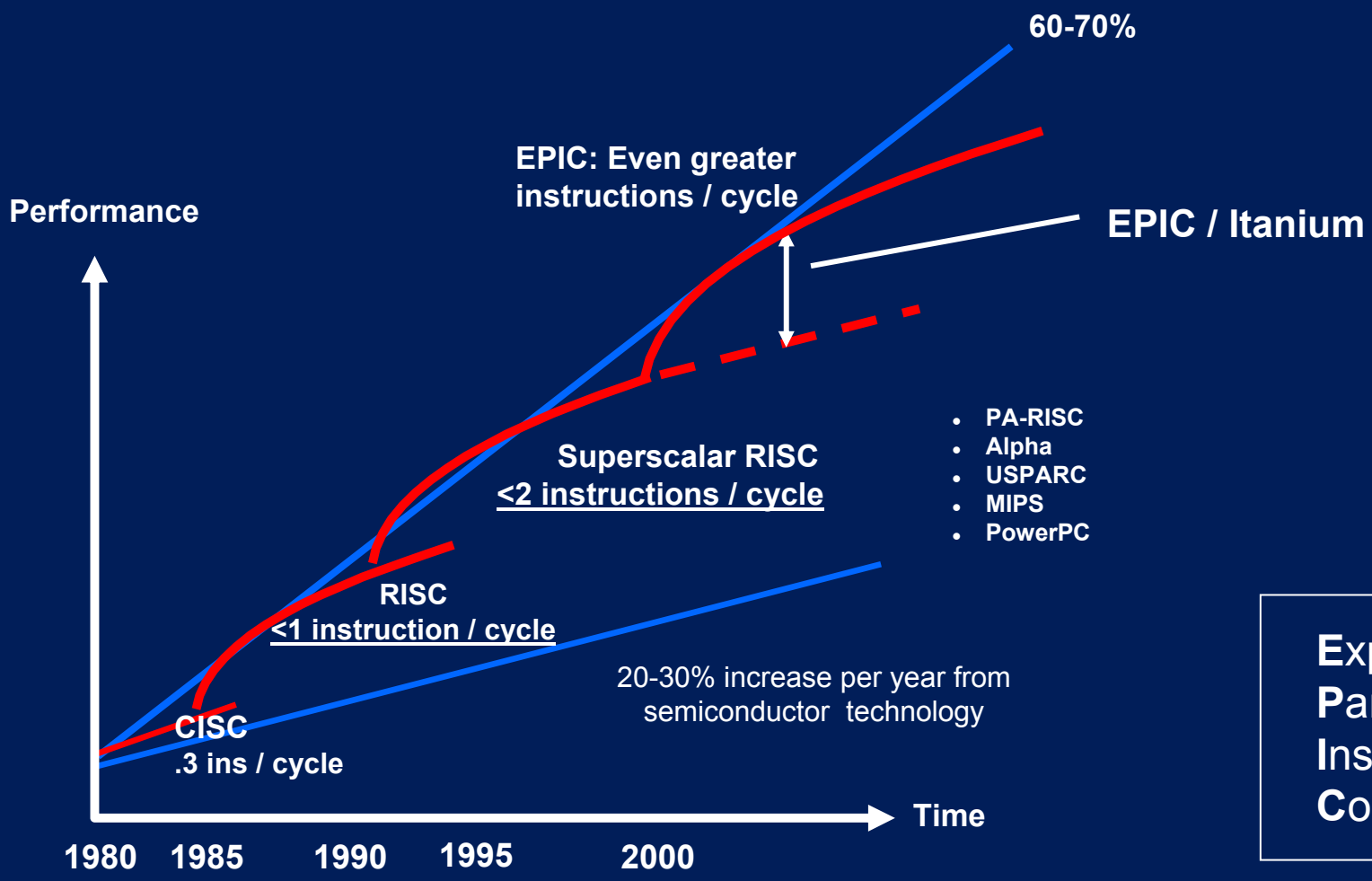
Warum Itanium?

- Adressraum
- Leistung

IT Relationship



Evolution of Microprocessor Technology



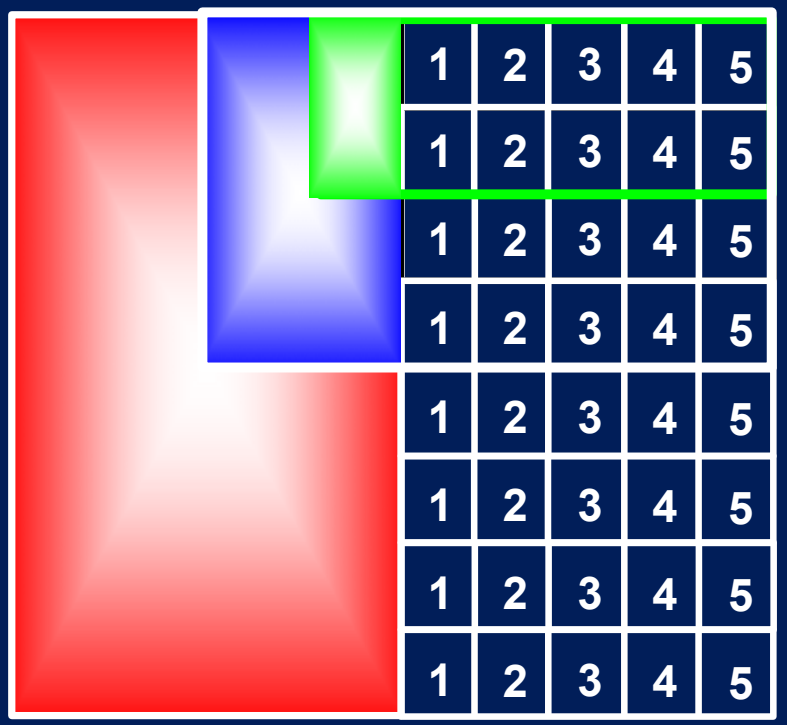
Explicitly Parallel Instruction Computing

Technology case for a new Architecture

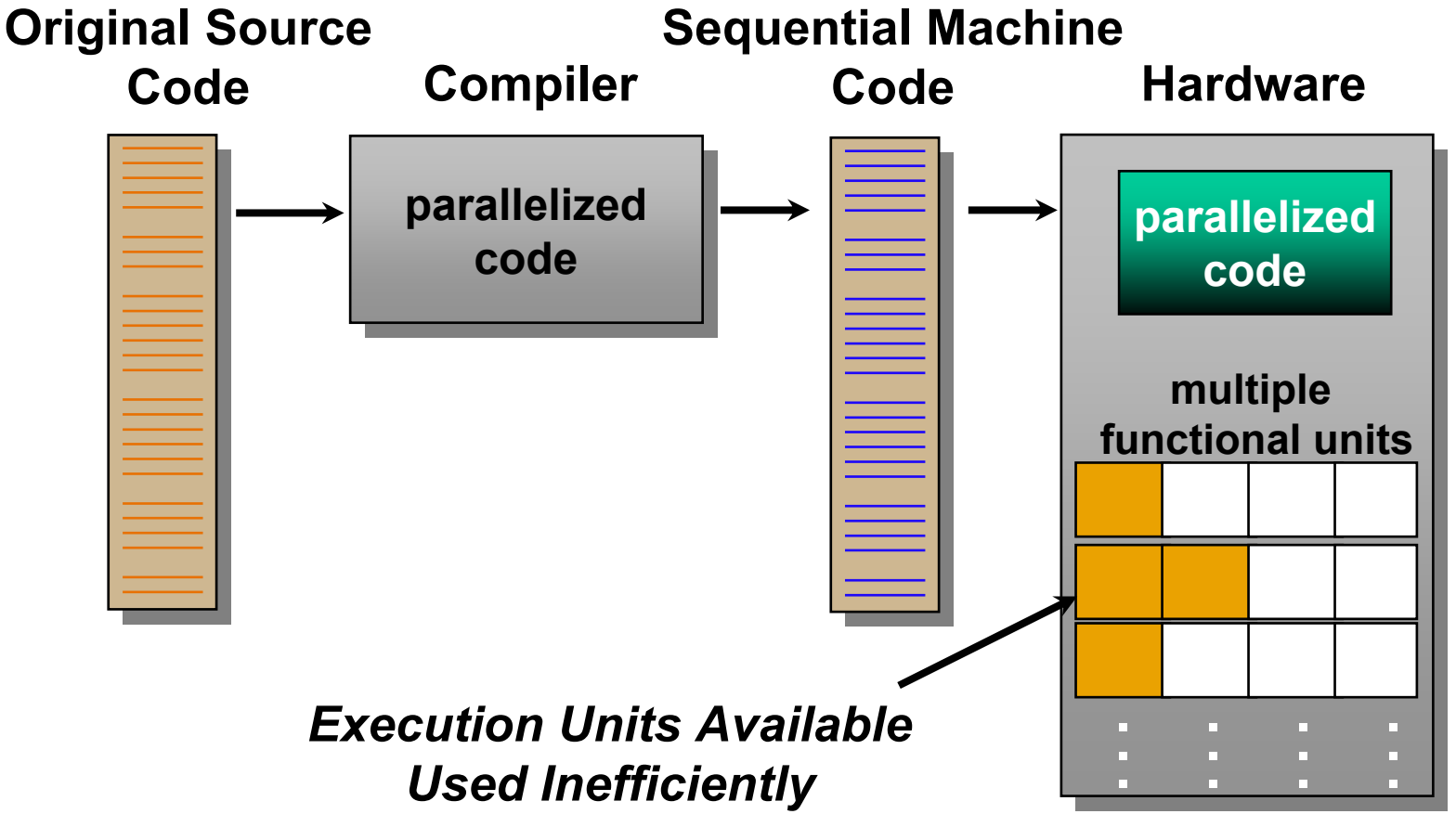
Superscalar Complexity Growth

- **Functional unit area** grows **linearly** with number of units.
- **Scheduler area** grows as the **square** of the number of units.

Cost-performance reaches a point of diminishing returns.

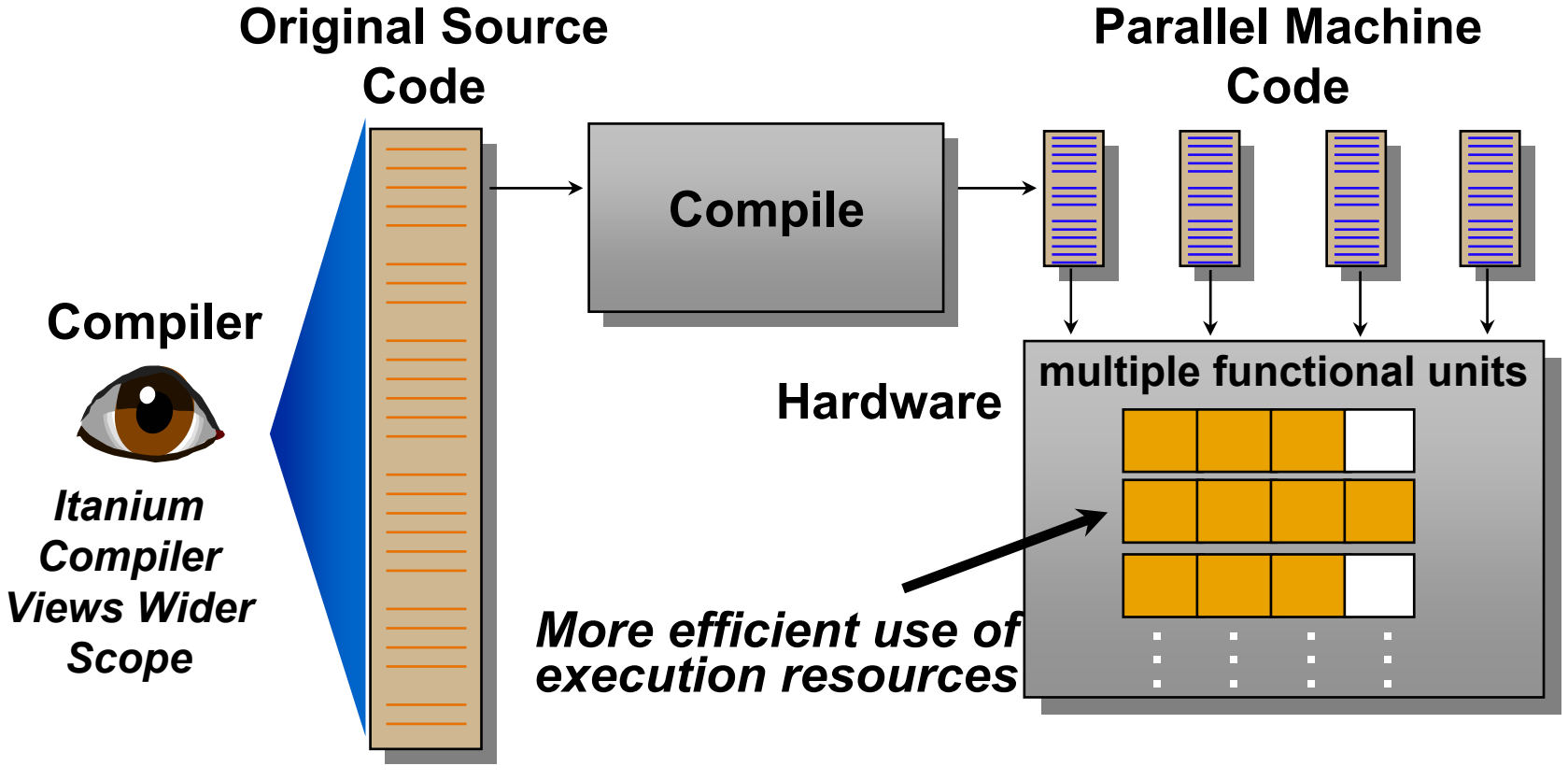


Traditional Architectures: Limited Parallelism



Traditional Processors often 60% Idle

IA-64 Architecture: Explicit Parallelism

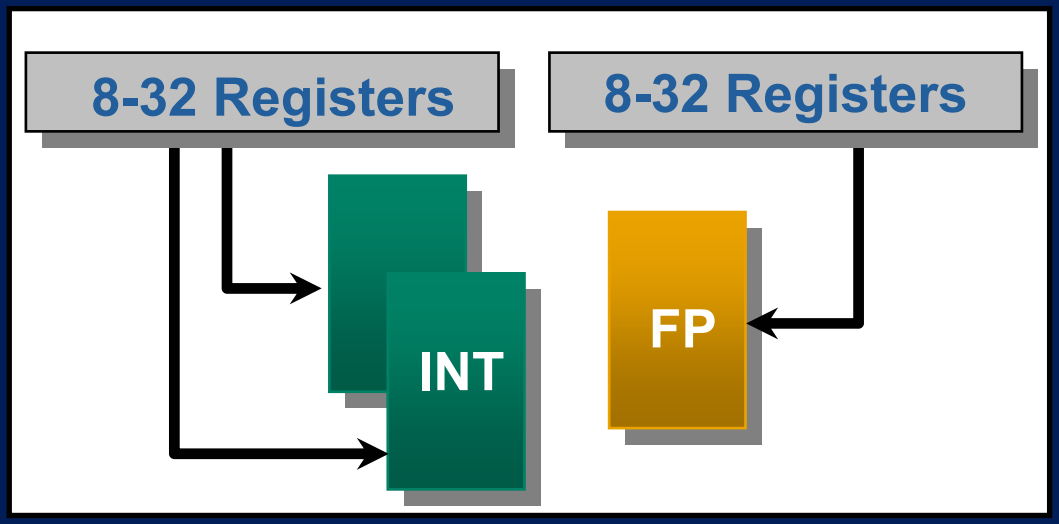


Increases Parallel Execution

Itanium™ Architecture: Massive Hardware Resources

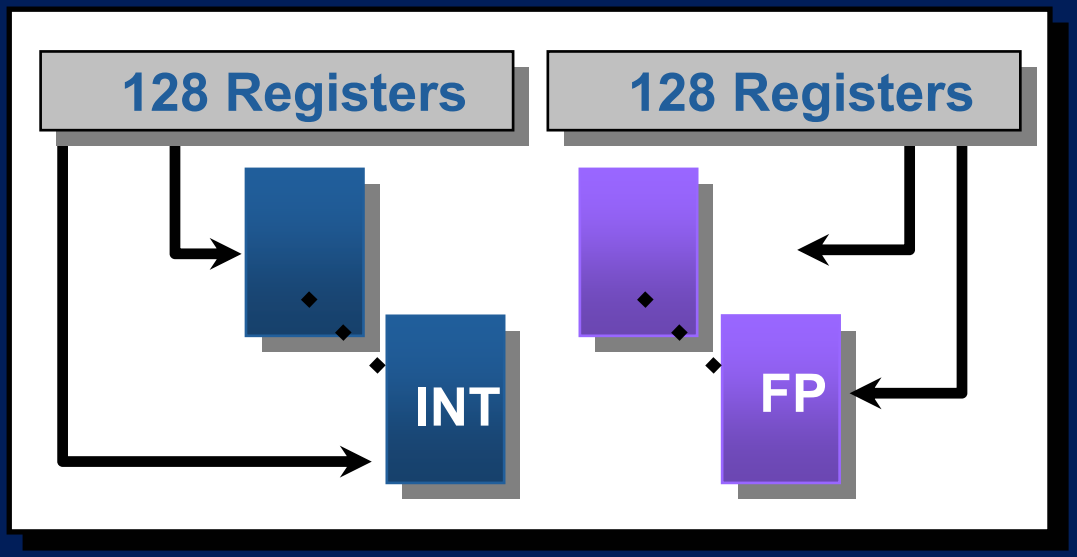
Traditional Architectures

- Few Integer Units, 8-32 Registers
- Few Floating Point Units, 8-32 Registers

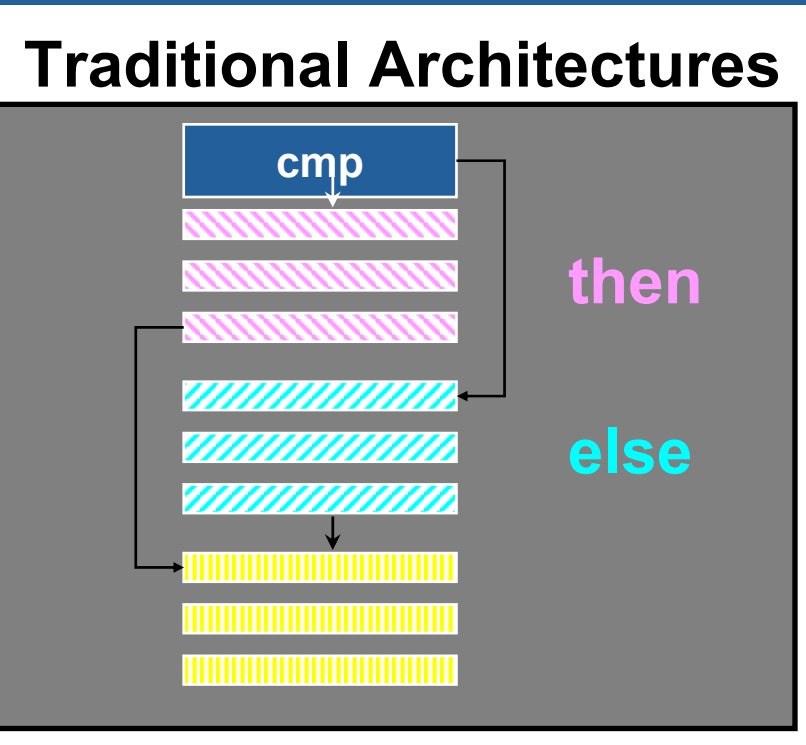


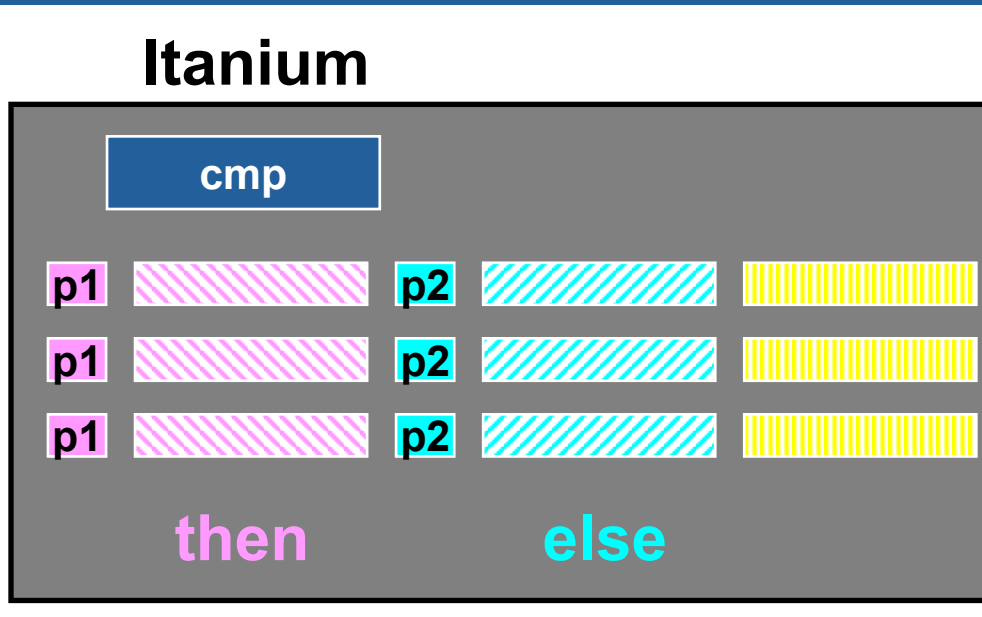
Itanium Architecture

- Many Integer Units, 128 Registers
- Multiple Floating Point Units, 128 Registers



Predication





- Removes branches, converts to predicated execution
  - Executes multiple paths simultaneously
- Increases performance by exposing parallelism and reducing critical path
  - Better utilization of wider machines
  - Reduces mispredicted branches

-Prozessor-Roadmap

Zwar werden alle künftigen Prozessoren für den High-end-Serverbereich wohl Itanium 2 heißen. Zur Unterscheidung bleiben die Projektnamen allerdings weiter wichtig. So soll noch in diesem Sommer ein verbesserter Itanium 2 auf den Markt kommen, der momentan als 'Madison' bezeichnet wird: Die 64-Bit-CPU wird mit 1,5 GHz getaktet und soll 6 MB Level-3-Cache mitbringen; bisher hat der Itanium 2 nur 1 MB zu bieten.

Kurz darauf soll dann 'Deerfield' kommen. Dieser Itamium-2-Cousin werde weniger Energie verbrauchen und soll in Blade- und Rackservern zum Einsatz kommen, heißt es bei Intel.

Im kommenden Jahr steht dann ein runderneuerter 'Madison' auf dem Programm, der die Performance mit 9 MB eigenem Cache noch einmal verbessern soll. Und schließlich: Der Dual-Core-Itanium mit zwei Herzen, genannt 'Montecito', soll nun schon 2005 verfügbar sein. Bisher hatte der Hersteller 2007 als voraussichtlichen Starttermin genannt.

Montecito wird voraussichtlich mit einer Leiterbahnbreite von nur noch 90 Nanometern gefertigt werden - derzeit sind die Designs noch doppelt so groß ausgelegt. Damit dürften die hochintegrierten Bausteine nicht wesentlich größer werden als sie es heute sind. Bis 2005 will der Hersteller in der Fertigung aber noch einen Zwischenschritt bei 130 Nanometern einlegen.

Um das Design '2-in-1' bemühen sich die Prozessorhersteller ganz besonders, seitdem IBM seinen Power-4 mit zwei integrierten CPUs bestückt hat. Sun will noch in diesem Jahr den Ultra-Sparc IV ähnlich ausrüsten.

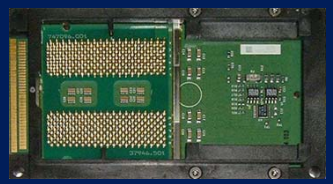
Für Kunden von Datenbankanwendungen, beispielsweise von Oracle, dürfte es besonders interessant sein, dass Intel im Gegensatz zu IBM vorhat, seinen Dual-Core-Itanium als "ein Prozessor" zu definieren. Damit wäre für einen Oracle-Server dann auch nur eine Lizenz fällig. Kunden, die Oracle auf einer Maschine mit IBMs Power-4 einsetzen, müssen sich dafür auch tatsächlich zwei Lizenzen zulegen.

Intel hat im Windschatten der viel beachteten Roadmap-Ankündigung nun auch noch eine neue Software vorgestellt, die Linux-Systeme auf Xeon- und Pentium-4-Plattformen deutlich beschleunigen soll. Bisher hatte sich der Halbleiter-König in allen seinen Entwicklungen eng an Microsoft angelehnt. Das Engagement im Open-Source-Bereich scheint jetzt an Bedeutung zu gewinnen.

Die Kunden hätten eine native Linux-Version der V-Tune-Anwendung gefordert, so ein Unternehmenssprecher. Dabei kann die Windows-Ausgabe sogar Linux-Rechner erkennen und steuern. Sie unterstützt zudem die Itanium-Plattform. Das wird V-Tune für Linux aber erst im Laufe des Jahres beherrschen, heißt es bei Intel.

Itanium® Processor Family Evolution

64-bit Enterprise Server Technology



Itanium

733,800 MHz
266MHz FSB
2, 4MB Cache
180nm process
Intel 480GX Chipset
Shipping

Itanium2

900MHz, 1GHz
400MHz FSB
1.5, 3MB iL3
180nm process
Intel E8870 Chipset
Shipping

Madison

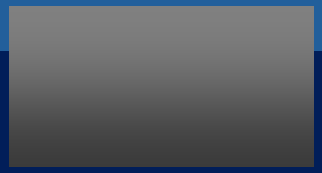
400MHz FSB
3, 6MB Cache on die
130nm process
mPGA700 ZIF
Pin compatible
w/ itanium 2
Intel 870 Chipset
Shipping

(Madison Follow-on, Madison+)

Higher Clock Rate
~9-12MB Cache on die
130nm process
mPGA700 ZIF
2004

Deerfield

Dual Processor
400MHz FSB
2MB Cache on die
130nm process
870 Chipset
2003



Montecito

Higher Clock Rate
Dual Core
Large Cache on die
Hyperthreading
2005

Itanium 2 Roadmap

2002

Itanium® 2 Processor

(1 GHz, 3MB L3)

2003

Itanium® 2 Processor

(Madison & Deerfield)

(1.5GHz, 6MB L3)

2004

HP developed

mx2 dual processor module

Itanium® 2 Processor

(1 GHz, 3MB L3)

Itanium® 2 Processor

(Madison 9M)

(>1.5GHz, 9MB L3)

2005

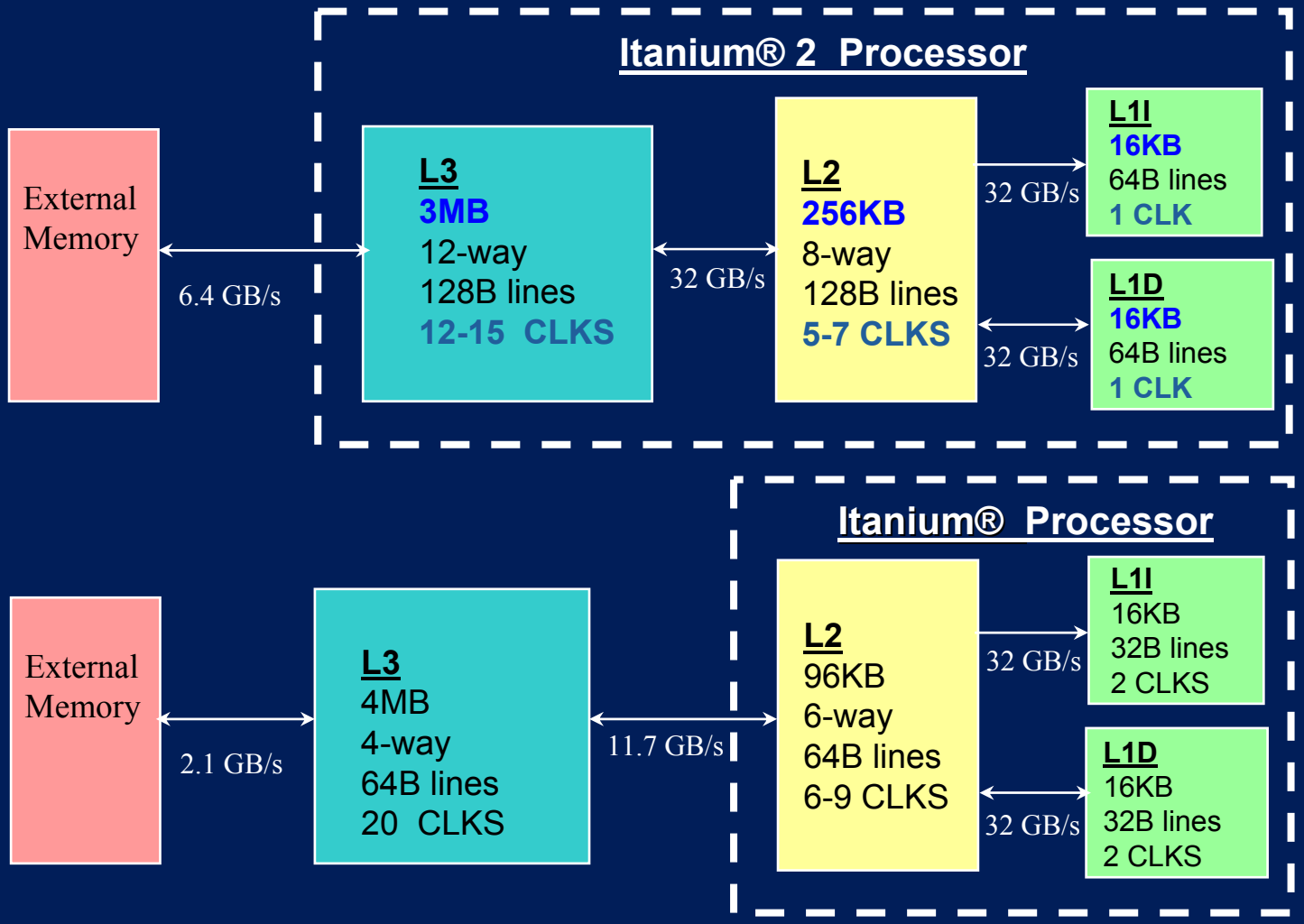
Montecito

(Dual Core)

>= 18 MB L3

L1,L2,L3 Cache on Die

Cache Enhancements



Cache Enhancements

	Itanium® 2 Processor	Madison/Deerfield
Level 1 Inst Cache	**16KB** **64B lines** **1 clock latency**	**16KB** **64B lines** **1 clock latency**
Level 1 Data Cache	**16KB** **64B lines** **1 clock latency**	**16KB** **64B lines** **1 clock latency**
Level 2 Cache	**256KB** **8-way** **128B lines** **5-7 clocks latency**	**256KB** **8-way** **128B lines** **5-7 clocks latency**
Level 3 Cache	1.5-3MB **on-die** 12-way **128B lines** 12-15 clocks **latency** 32 GB/s **bandwidth**	Madison: 3-6MB **on-die** Deerfield: 3MB **on-die** 24-way **128B lines** 14-17 clocks **latency** 48 GB/s **bandwidth**

Itanium® Processor Family

Platform Compatible Processors

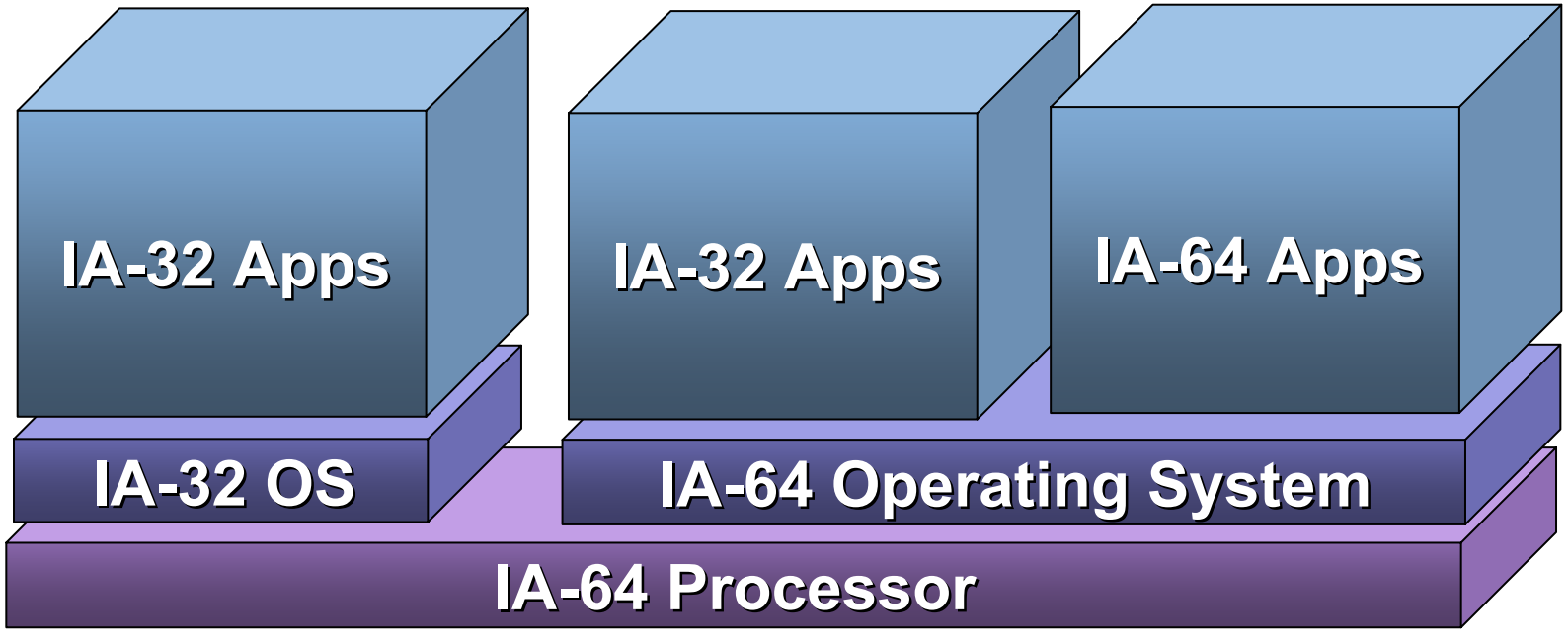
	McKinley Processor	Madison Processor	Montecito Processor
Process	0.18 µm	0.13 µm	90 nm
Core Voltage	1.5 V	1.3 V	1.2 V
Max Frequency	1 GHz	1.5 GHz	2.2 GHz
L2 Cache	256 KB Unified		256 KB Data, 512 KB Instruction
L3 Cache	1.5 - 3 MB	3 - 6 MB	6 - 12 MB
Other Features			Hyper-Threading Technology
Platform Compatibility	Intel® Itanium® 2 processor system bus protocol, package and power delivery form factor compatible		
First Samples		Q3 2002	2H 2003
Platform Release	July 2002	Q2 2003	2004

Montecito Processor Benefits

- Montecito is drop in compatible with Intel® Itanium® 2 processor based systems, extends platform life
  - **PAC611 based follow-on to Madison**
  - **Maintains the same bus protocol and Intel® 870 chipset support**
  - **Extension of the McKinley micro-architecture to 90nm process technology**
- Feature enhancements enable 30 – 50% boost over Madison performance projections
  - **Hyper-Threading Technology for greater throughput**
  - **~1.5X increase in core clock frequency**
  - **2X increase in L3 cache sizes (12MB Heavy cache offering)**
  - **Split L2 cache (256K D and 512K I) reduces likelihood of L2 cache miss**
- Introduces Hyper-Threading Technology to the Itanium® Processor Family
  - **Supports industry trend toward multi-threaded applications**

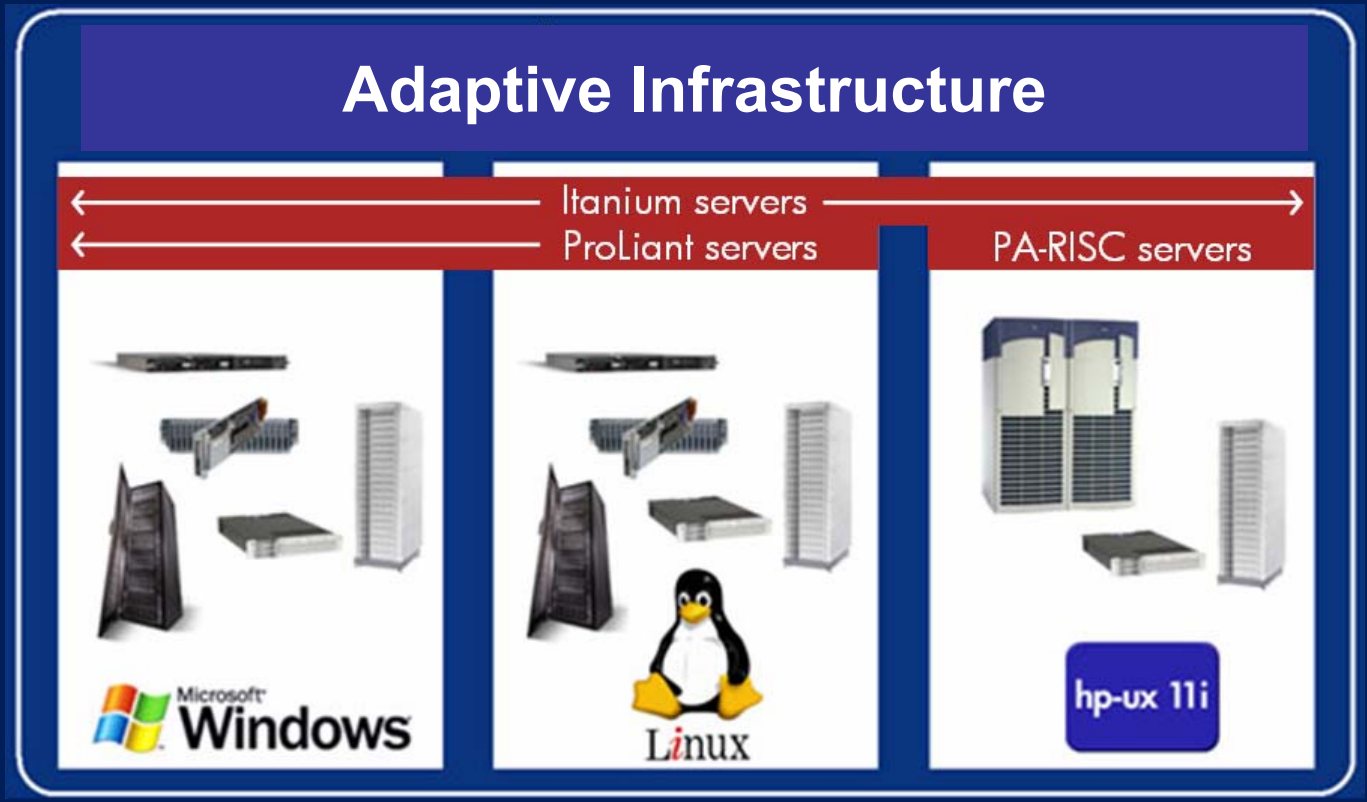
IA-64 Compatibility for IA-32

IA-64 delivers investment protection



Full compatibility with the IA-32 instruction set includes SSE and MMX™ Technology instructions supported in processor hardware

hp ‘Platform of Choice’ strategy



HP is the only Enterprise Server Vendor with a balanced Operating System Strategy across Windows, HP-UX and Linux responding to heterogeneous customer environments

Industry Momentum Behind IA-64

Server mit Itanium

HP Servers and Workstations

based on the Intel® Itanium® 2 processor

HP offers:

- zx1, the fastest chipset with the lowest latency and highest bandwidth
  - 15-20% faster than other Itanium 2-based chipsets

- Support AGP for leadership graphics at the lowest prices
- Industry's greatest operating system flexibility

first to market!!

hp server rx2600

hp server rx5670

hp workstation zx2000

hp workstation zx6000

HP's Itanium™-based systems roadmap

hp invent

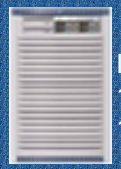
intel inside ITANIUM 2

hp zx1 chipset based systems

scalable (cell-based) servers with super scalable processor chipset sx1000

Superdome

Intel Madison
1-64 way SMP
Full cabinet



Intel Madison
1-16 way SMP
17 U, 19" rack

Intel Madison
1-8 way SMP
10U, 19" rack

Itanium® 2 Processor
(Madison 9M)
(>1.5GHz, 9MB L3)

HP developed
mx2 dual processor module

Itanium® 2 Processor
(1 GHz, 3MB L3)

rx5670

Intel Itanium 2
1-4 way SMP
7U, 19" rack

Madison Upgrade
1-4 way SMP
7U, 19" rack

rx4640

Madison
1-4 way SMP
4U, 19" rack

rx2600

Intel Itanium 2
1-2 way SMP
2U, 19" rack

Madison Upgrade
1-2 way SMP
2U, 19" rack

Exact timing of these platforms is dependent
Intel shipment dates for the underlying proce

2002 2003 2004

rx2600

specifications

- 1 to 2 Intel Itanium 2 processors 1.0GHz or 900MHz
- system bus bandwidth 6.4GB/s
- level 3 cache 3 MB (1.0GHz) or 1.5 MB (900MHz)

main memory

- bus bandwidth 8.5GB/s
- PC2100 ECC registered DDR266A SDRAM
- 12GB Max, 12 DIMM slots

operating systems

- HP-UX 11i
- Microsoft Windows
- Linux

Internal storage devices

- 3 hot-plug SCSI disk bays 36GB (10K and 15K rpm) and 73GB

expansion slots

- PCI-X Slots 4 full-length, 64bit/133MHz PCI-X
- IO bandwidth 4.0GB/s
- pedestal or 2U EIA rack

rx5670

specifications
- 1 to 4 Intel Itanium 2 processors 1.0*GHz* or 900*MHz*
- system bus bandwidth 6.4*GB*/s
- level 3 cache 3 *MB* (1.0*GHz)*, 1.5 *MB (*900*MHz)*

main memory
- bus bandwidth 12.8*GB*/s
- PC2100 *ECC* registered DDR266A *SDRAM*
- 48*GB* Max, 48 *DIMM* slots on two 24 slot extenders

operating systems
- HP-UX 11i
- Microsoft Windows
- Linux

Internal storage devices
- 4 internal *HDD* drive bays Ultra 160 *SCSI,* 36GB and 73*GB*

expansion slots
- *9 PCI*-X Slots (3 x 133*MHz*, 6 x 66*MHz*)
- *1 PCI* Slot (33*MHz)*
- *IO* bandwidth 4*GB*/s
- VGA (optional), 2 x *USB* (optional)
- Height: 7U EIA

rx4640

Standard

- 4U (10 per 2-meter rack)
- Rack-optimized
- One to four Intel Itanium 2 processors
- HP zx1 chipset
- 6.4 GB/s system bandwidth
- 12.8 GB/s memory bandwidth
- Six PCI-X I/O slots
- Independent I/O channels
- 4.0 GB/s I/O bandwidth
- Gigabit LAN and Ultra160 SCSI
- Management processor
- HP-UX, Linux, Windows (1H 2004) and OpenVMS operating systems support

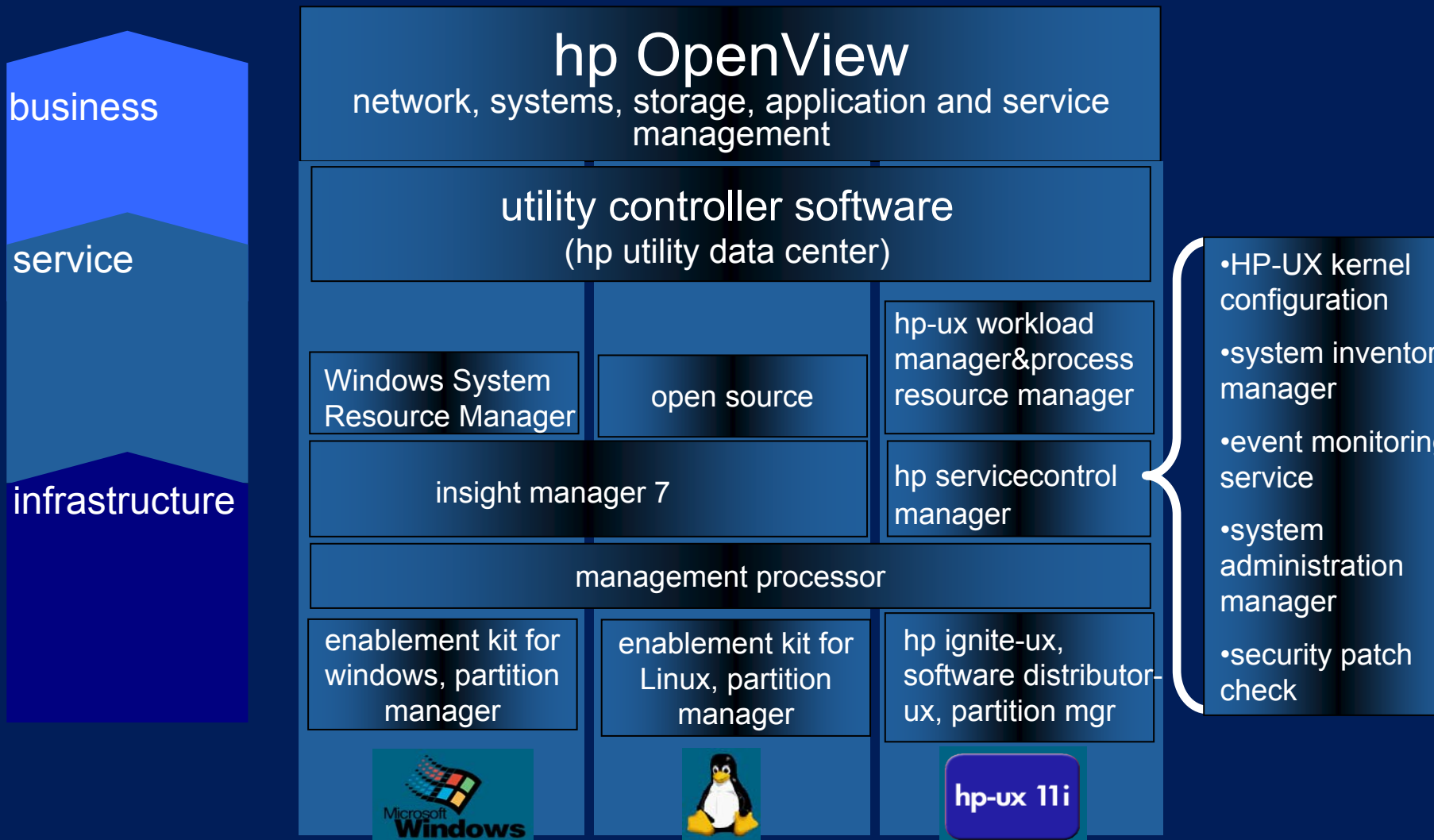
Growth and connectivity

- Up to 64 GB error correcting and checking DDR memory
- Two internal hot-plug disks
- VGA, USB, RAID
- Optional DVD

High availability

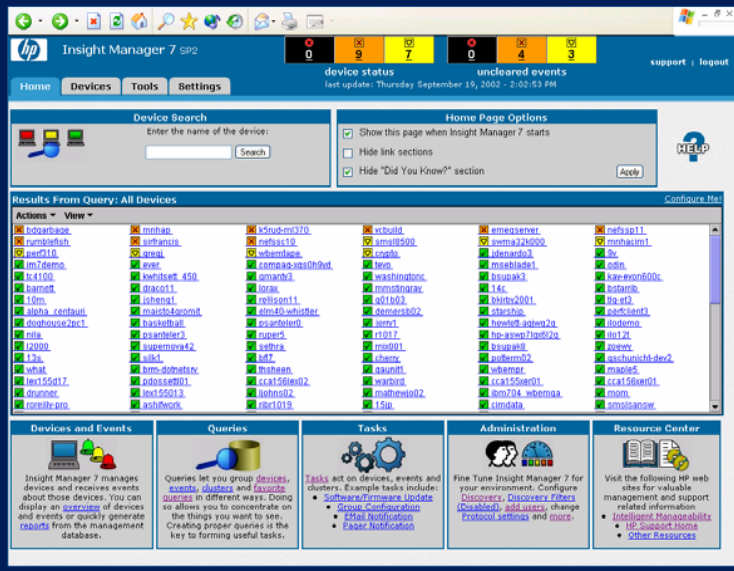
- Hot-plug disks
- Redundant, hot-swap fans and power
- Memory scrubbing and page de-allocation
- CPU failure de-allocation
- Memory chip spare
- HP MC/Serviceguard support

automated intelligent management
management solutions for Itanium2-based servers



Insight Manager 7
for ProLiant and Itanium 2 servers

- Why Insight Manager 7?
  - integrated management of Itanium2 and IA32 platforms
  - ease of use
    - access through a web-browser anytime and anywhere
- What does it do for Itanium 2-based servers?
  - discovery
  - identification
  - alerting
  - inventory reports
- What doesn't it do?
  - version control
  - system management home page



Where can I get the agents?

http://www.software.hp.com/cgi-bin/swdepot_parser.cgi/cgi/displayProductInfo.pl?productNumber=SNMPLINUX

HP enablement kit for Linux

- Why use it?
  - deploy Linux servers quickly and easily
  - improve productivity
  - bundled with every LInux Itanium2-based server
- What does it do?
  - provides all that is needed to install supported Linux distributions on an HP server.
  - includes SystemImager which enables users to:
    - automate the installation of Linux to large numbers of similar servers
    - automates software distribution, content distribution, and operating system updates.
    - maintain custom loads and automatically install new servers to match the configuration.
    - perform diagnostic and recovery operations on a damaged OS instance

deploy Linux

Management Processor – on HP Itanium Servers

Analogous functionality as with iLO/RILOE

- Why management processor?
  - improve productivity
  - manage securely from anywhere
  - embedded in the server

- What does it do?
  - web-based access anytime, anywhere regardless of server state
  - power cycle server
  - view event and status logs

New!

  - SSL encryption

monitor
HP-UX/Windows/Linux

Next generation systems level management

Enhanced functionality based on a single management architecture and application for HP-UX, Linux and Windows

- Unifies industry-leading technologies from Insight Manager, Toptools and Servicecontrol Manager
- Delivered as an upgrade to Insight Manager and Servicecontrol Manager
- Easy-to-use system level management for highest efficiency
- Modular, customizable structure for maximum flexibility
- Standard-based for optimum integration

Storage for Itanium2-based servers with Linux

Key:
Blue = pre-merger HP storage
Green = pre-merger Compaq storage

XP

EVA

VA7400

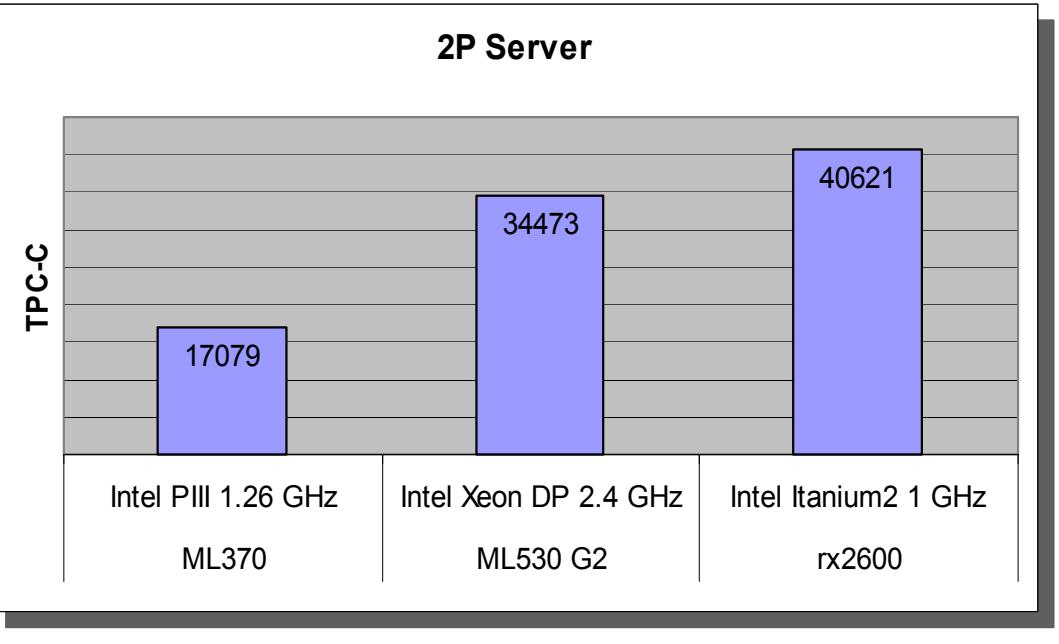
MSA1000

StorageWorks 4300
(SmartArray 5300 controller)

VA7100

Benchmarks

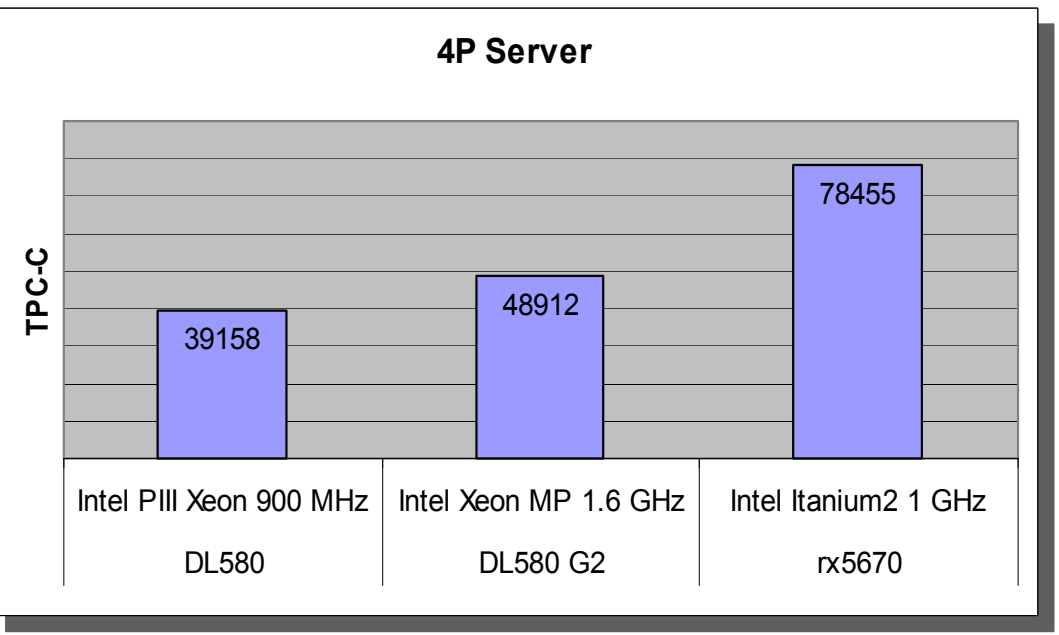
Itanium 2: 2-Wege



- Itanium 2
  - 1 GHz
  - 3 MB L3-Cache
- 140 % schneller als Intel PIII
- 20 % schneller als Intel Xeon DP

Windows 2000, MS SQL Server 2000
www.tpc.org
Stand: 29.07.2002

Itanium 2: 4-Wege

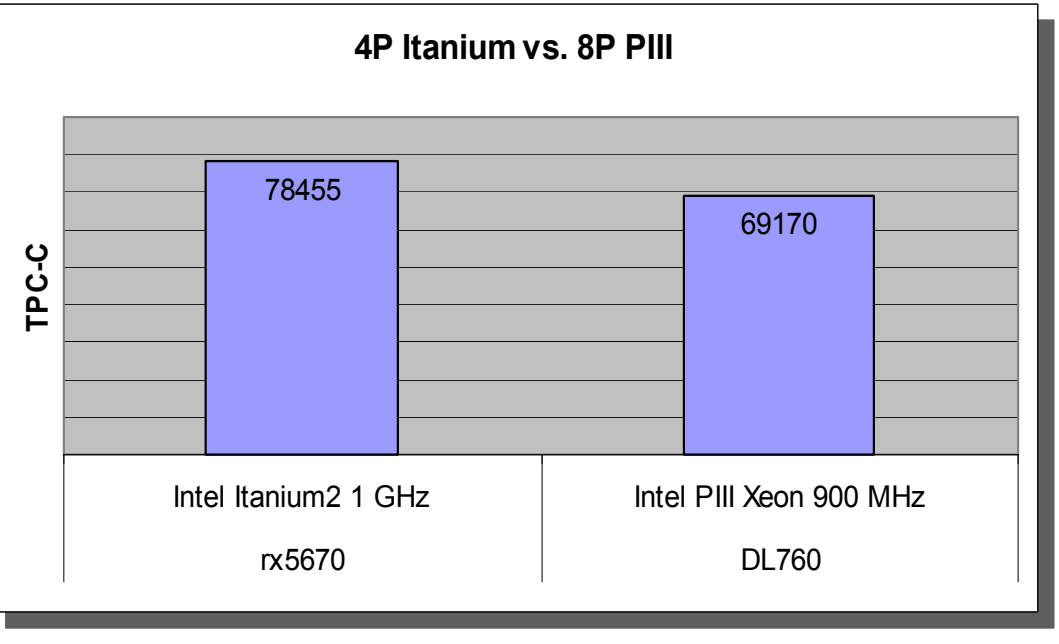


- Itanium 2
  - 1 GHz
  - 3 MB L3-Cache
- 100 % schneller als Intel PIII
- 60 % schneller als Intel Xeon MP

Windows 2000, MS SQL Server 2000
www.tpc.org
Stand: 29.07.2002

rx5670:
- schnellster 4P-Server
- erstklassiges Preis-Leistungs-Verhältni

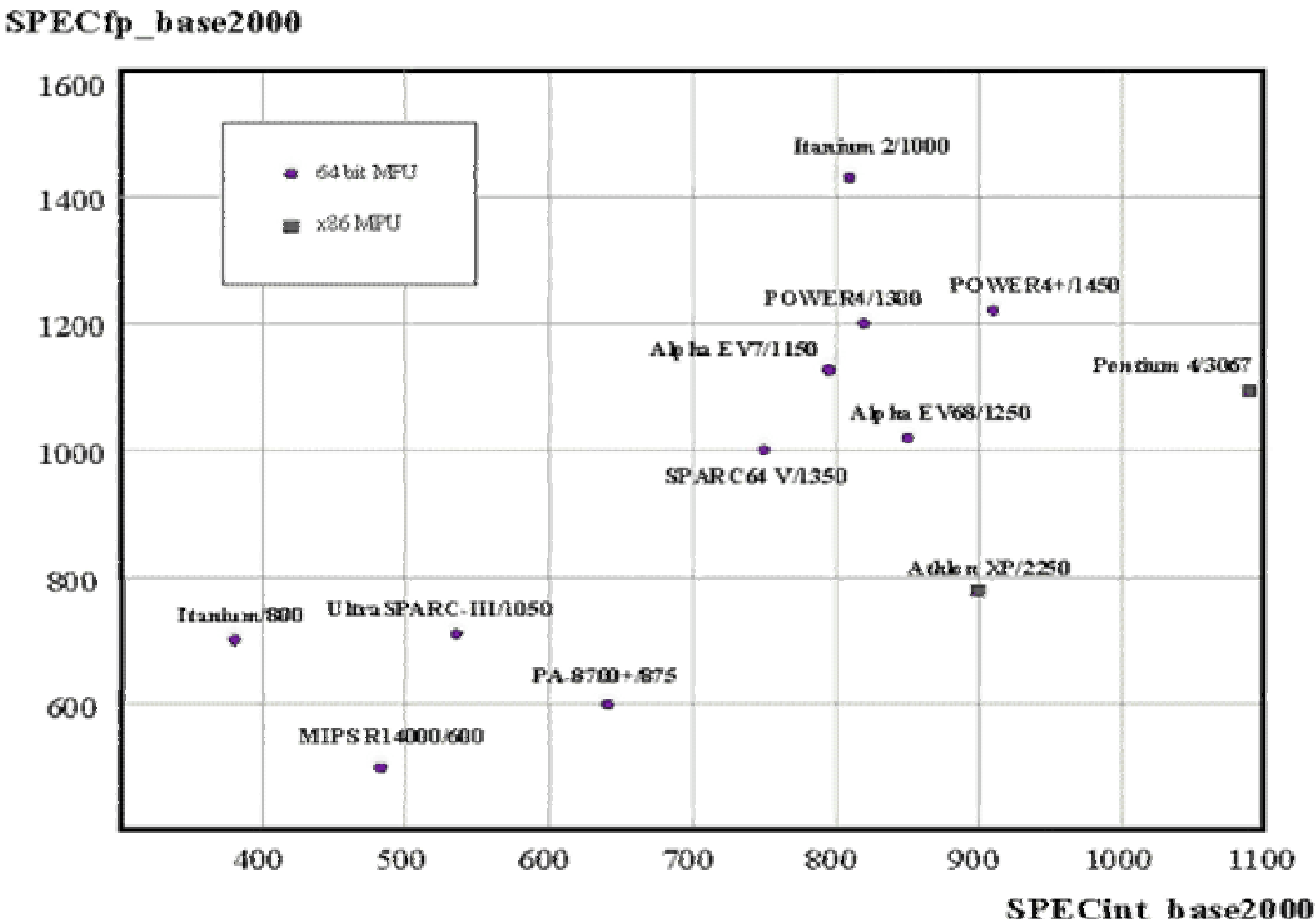
Itanium 2: 4-Wege



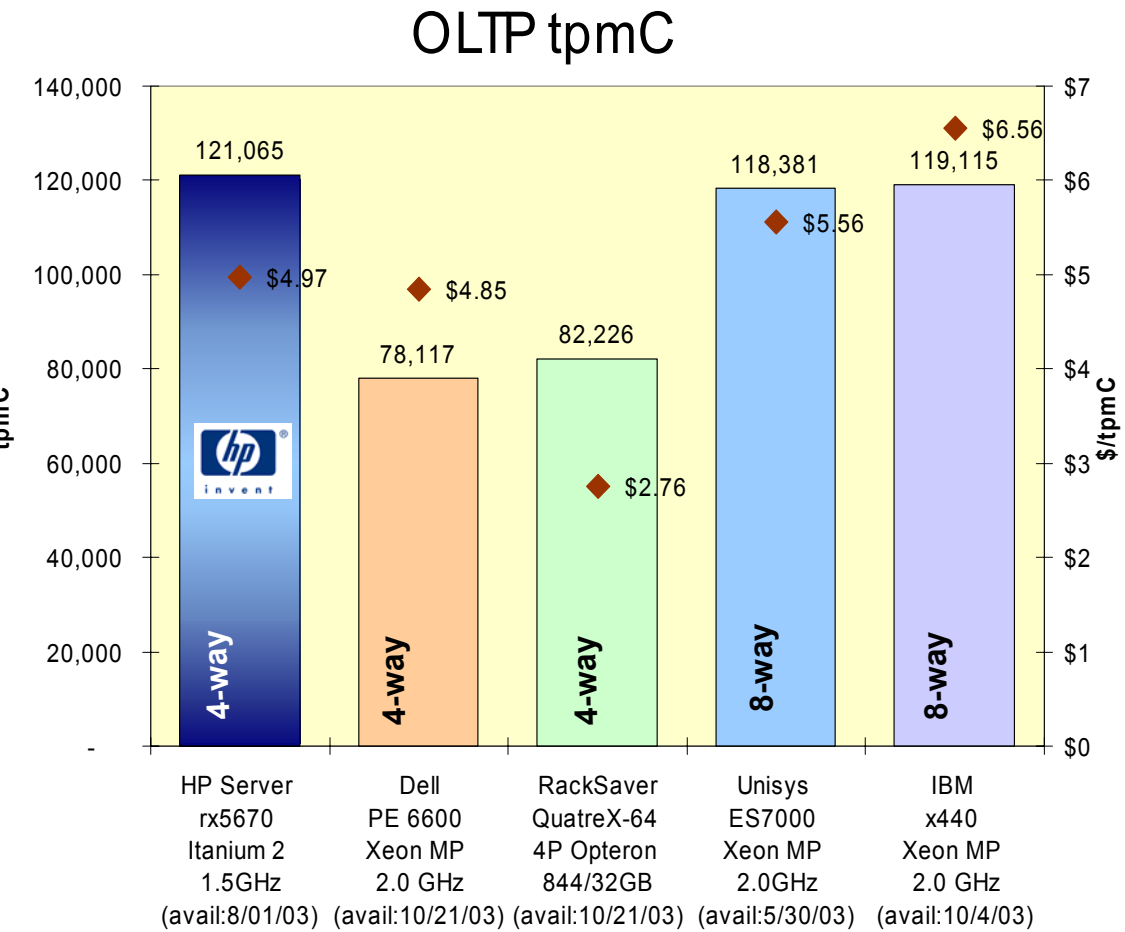
- Itanium2
  - 1 GHz
  - 3 MB L3-Cache
- 4P Itanium:
- 13 % schneller als 8P PIII (900 MHz)

Windows 2000, MS SQL Server 2000
www.tpc.org
Stand: 29.07.2002

SPEC2000


SPECfp_base2000
1600
1400
1200
1000
800
600
64 bit MFU
x86 MFU
Itanium 2/1000
POWER4/1300
POWER4+/1450
Alpha EV7/1150
Pentium 4/3067
Alpha EV68/1250
SPARC64 V/1350
Athlon XP/2250
Itanium/800
UltraSPARC-III/1050
PA-8700+/875
MIPS R14000/600
400
500
600
700
800
900
1000
1100
SPECint_base2000

rx5670:
führend in TPC-C-Leistung und Preis/Leistung



Data as of April 24, 2003. See complete results at www.tpc.org.

HP Server rx5670 with next generation Itanium 2 processors and 64-bit Windows delivers an unparalleled combination of database performance AND price for performance

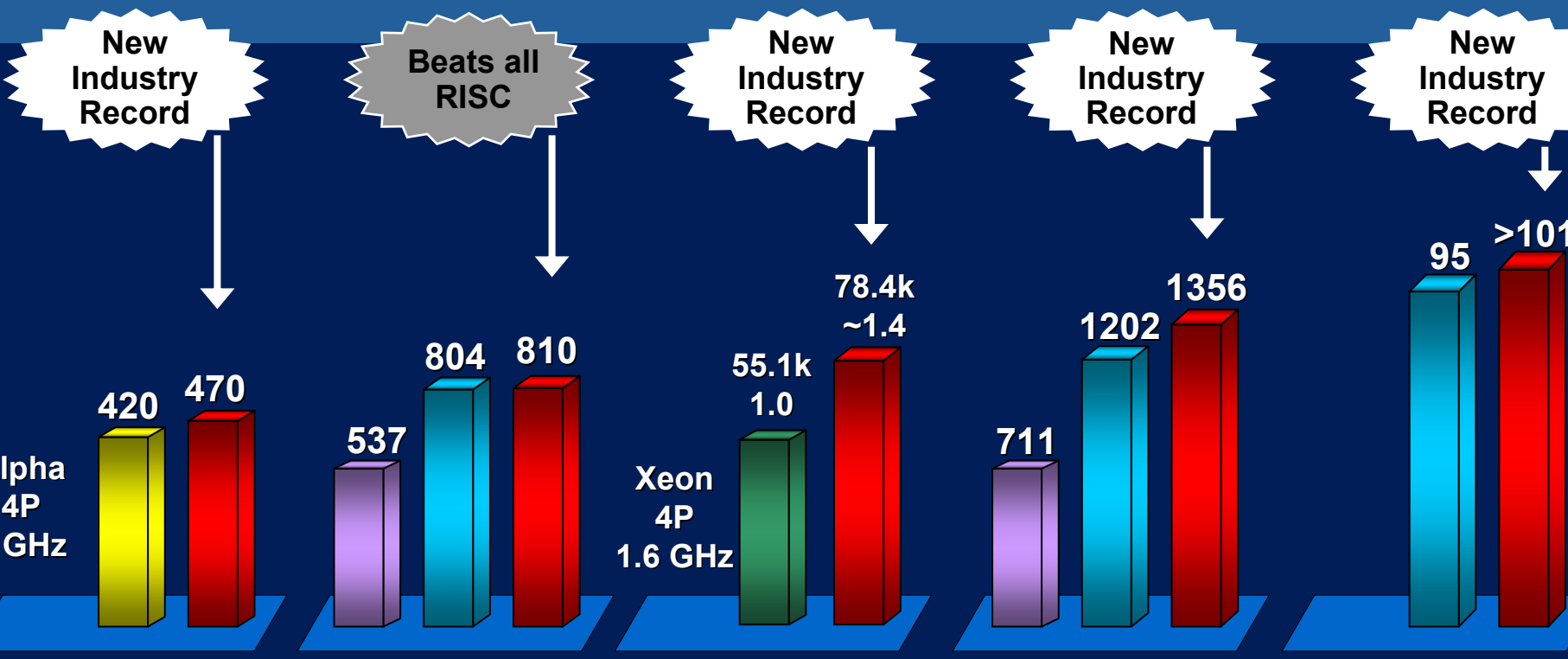
- #1 published 4-way performance at 121,065 tpmC Results top all other 4- and 8-way server architectures[1].
- Exceptional performance, at a excellent 4-way price for performance[2] of $4.97/tpmC

1 HP server architecture is Itanium-based, Dell, IBM and Unisys are IA-32 RackSaver is Opteron

2 HP, Dell, IBM, Unisys and RackSaver results on Windows

Itanium® 2 Processor - Record Setting Performance

Comparing Itanium 2 processor to highest other processor in each benchmark



Sun USIII 1.05 GHz

IBM P690 Turbo 1.3GHz

Itanium® 2 Processor 1GHz

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, reference www.intel.com/procs/perf/limits.htm or call (U.S.) 1-800-628-8686 or 1-916-356-3104

HP Integrity #1 4-way and 2-way performance
with Madison 1.5GHz processors

New!

Itanium 2 “Madison” 1.5GHz 6M cache results
Madison ups the clock speed and doubles the L3 cache, all on a smaller die

Benchmark	*System*	*OS*	*Result **	*Rank*
rx5670				
SAP SD	**rx5670**	**HP-UX - Oracle**	**850 with 1.5GHz Itanium 2**	**# 1 4-way**
SPEC web99_ SL	**rx5670**	**HP-UX**	**3,344 with 1.5GHz Itanium 2**	**# 1 4-way**
rx2600				
SPEC_web99_SLL 2 CPUs HP-UX	**rx2600**	**HP-UX**	**1,750 with 1.5GHz Itanium 2**	**# 1 2-way**

HP Integrity #1 4-way commercial performance across HP-UX, Linux, & Windows

Itanium 2 “McKinley” 1GHz results

Benchmark	*System*	*OS*	*Result **	*Rank*
SAP APO-DP	rx5670	Windows	157,555	# 1
SAP ATO	rx5670	HP-UX - Oracle	3,090	# 1
SAP SD	rx5670	HP-UX - Oracle	600	# 2 behind Madison result
Oracle Apps	rx5670	HP-UX	4,200	# 1
SPEC web99_ SL	rx5670	HP-UX	2,280	# 2 behind Madison result
TPC-C	rx5670	Windows/SQL Linux/Oracle10i HP-UX/Oracle10i	87,741 80,494 80,570	# 1
SPECJAppServ 2002 dual node	rx5670	HP-UX/ BEA	408.02tops $1,075.17/tops	# 1

HP Integrity #1 4-way technical performance

Itanium 2 “McKinley” 1GHz results

Benchmark	*System*	*OS*	*Result*	*Rank*
SPECfp_base/ peak 1CPU	rx5670	Linux	1,431	# 1
SPECfp_rate_ base/peak	rx5670	Linux		# 1
4 CPUs			49.3	
2 CPUs			30.7	
1 CPU			16.6	
linpack NxN	rx5670	HP-UX	15.127 GFlops/sec 95% of peak	# 1

rx5670 tested with 1GHz Itanium 2 processors

HP Integrity 4-way performance
across HP-UX, Linux, and Windows

Itanium 2 “McKinley” 1GHz results

Benchmark	*System*	*OS*	*Result*	*Rank*
Spec sfs97_R1(v2)	rx5670	HP-UX	37,068	#2
SPECint_rate 4 CPUs	rx5670	HP-UX	36.8	#2
SAP SD	rx5670	Windows-SQL	470	#2
Spec JBB2000	rx5670	HP-UX	63,414	#3
SPECint_base 1 CPU	rx5670	HP-UX	807	#4

rx5670 tested with 1GHz Itanium 2 processors

HP Integrity #1 2-way performance
across HP-UX, Linux, and Windows

Itanium 2 "McKinley" 1GHz

Benchmark	*System*	*OS*	*Result **	*Rank*
SPECint_rate 2 CPUs	rx2600	HP-UX	18.70	# 1 2-way
SPECfp_base 1 CPU	rx2600	Linux HP-UX	1,427 1,174	#1 & #2 2-way
SPECfp_rate	rx2600		*1GHz 1GHz 900MHz* *Linux/HP-UX/HP-UX* 2CPUs = 29.9/24.2/23.9 1CPU = 16.6/13.6/13.4	#1, #2, #3 2-way
SPEC_web99_SLL 2 CPUs HP-UX	rx2600	HP-UX	1,230	# 2 behind Madison result
MSC/ Nastran	rx2600	HP-UX	1.5x faster than IBM p4 systems	# 1 2-way
TPC-C	rx2600	Windows/SQL	Estimated 40,000	Beats all other 2-way

rx2600 tested with 1GHz Itanium 2 processors unless otherwise noted as 1.5GHz Itanium 2

MSC/Nastran results run with prerelease v2002, submitted to and approed by MSC

HP Integrity 2-way performance
across HP-UX, Linux, and Windows

Itanium 2 “McKinley” 1GHZ & 900MHz results

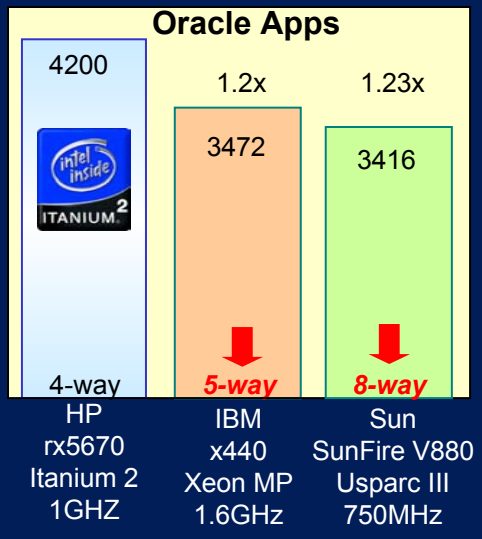
Benchmark	*System*	*OS*	*Result*	*Rank*
Spec_int_base 1 CPU @ 1GHz	**rx2600**	**HP-UX**	**810**	**#2 2-way**
rx2600 tested with 1GHz Itanium 2 processors				
SPEC_web99_SSL 2 CPUs @ 1GHZ	**rx2600**	**Linux**	**770**	**#5**
rx2600 tested with 1GHz Itanium 2 processors				
Spec_int_base *1 CPU*	***rx2600***	***HP-UX***	***674***	**#5 2-way @ 900MHz**
rx2600 tested with 900MHz Itanium 2 processors				

HP Integrity Servers 4-way outperforms larger systems from Sun and IBM

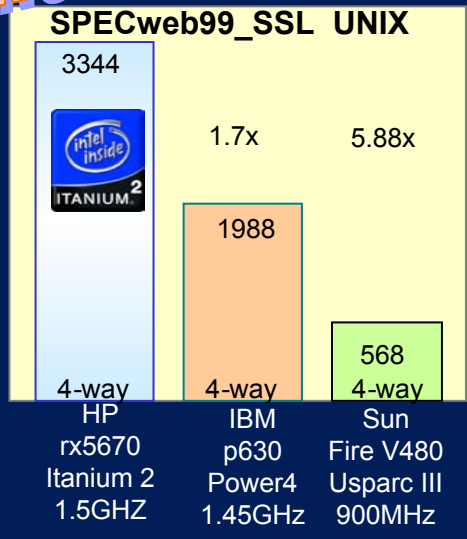
Unmatched application performance!

Itanium 2 architecture unleashes much more than just 64-bits and fast floating point

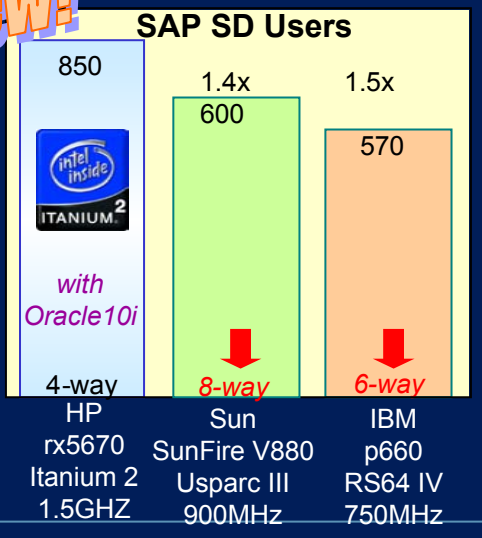
The 4-way rx5670 delivers outstanding performance with fewer CPUs than the competition

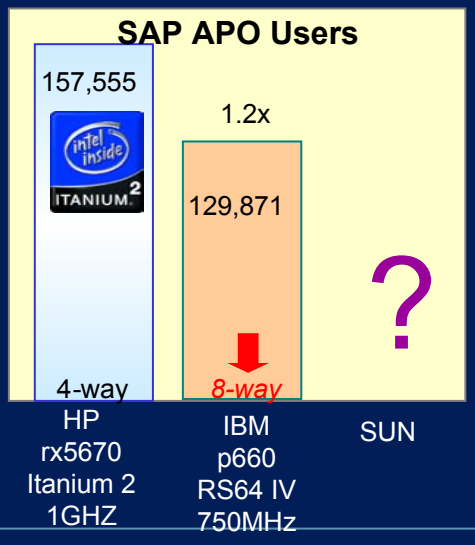


New!



New!





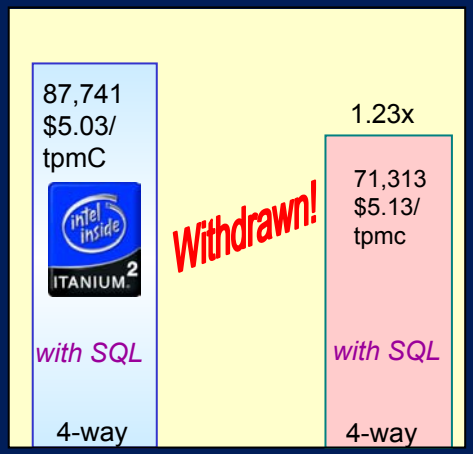
HP Integrity Servers 4-way OLTP
top performance with Windows, Linux, and HP-UX

#1

4-way price/performance
$5.03/tpmC

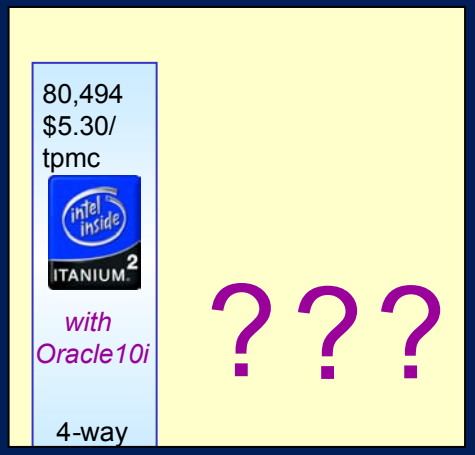
Itanium 2 architecture unleashes much more than just 64-bits and fast floating point

OLTP tpmC with **Windows**



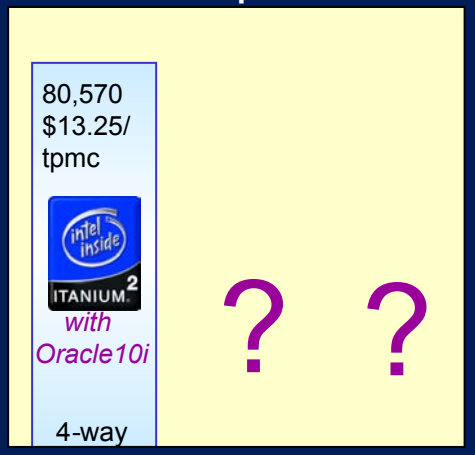
HP rx5670 Itanium 2 1GHZ | IBM x440 Xeon MP 2GHz | Dell PE6600 Xeon MP 2GHz

OLTP tpmC with **Linux**



HP rx5670 Itanium 2 1GHZ | **SUN Dell IBM**

OLTP tpmC with **Enterprise Unix**



HP rx5670 Itanium 2 1GHZ | IBM | SUN

Tpm-C and $/tpm-C results from Feb 2003

TPC-C with Linux

HP, Red Hat, & Oracle deliver the world's first single system TPC-C results with Linux

the configuration

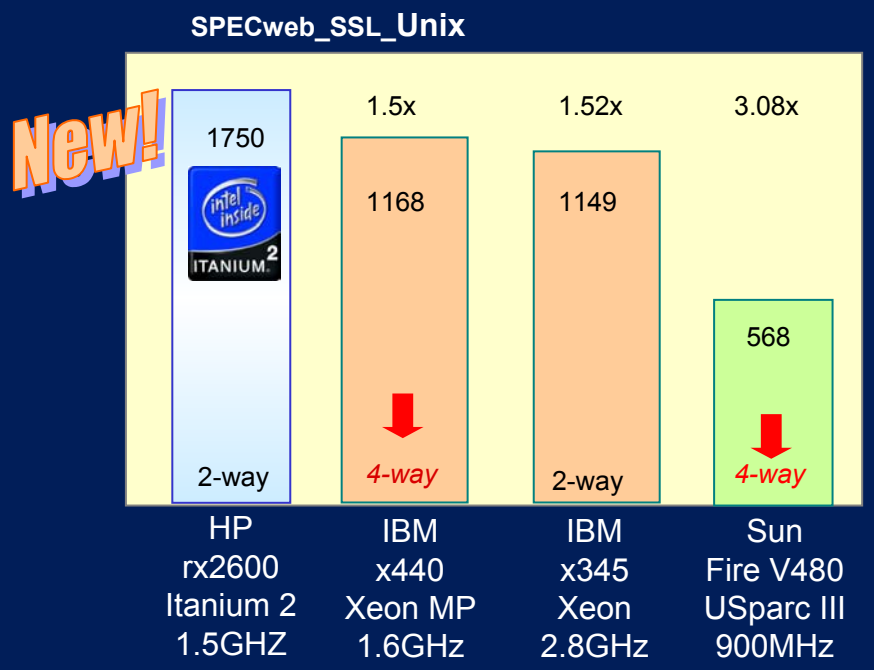
- HP rx5670 4–processor Itanium 2 server
  1.5 GHz, 6 MB Cache
- Oracle10*g* Database Standard Edition
- Red Hat Linux Advanced Server 3
- HP StorageWorks 4300 and MSA1000
- HP ProLiant servers used as front-end clients

the results

- 136,111 tpmC (fastest 4-way server)
- 3.94 $/ tpmC

HP Integrity Servers 2-way SLL encryption

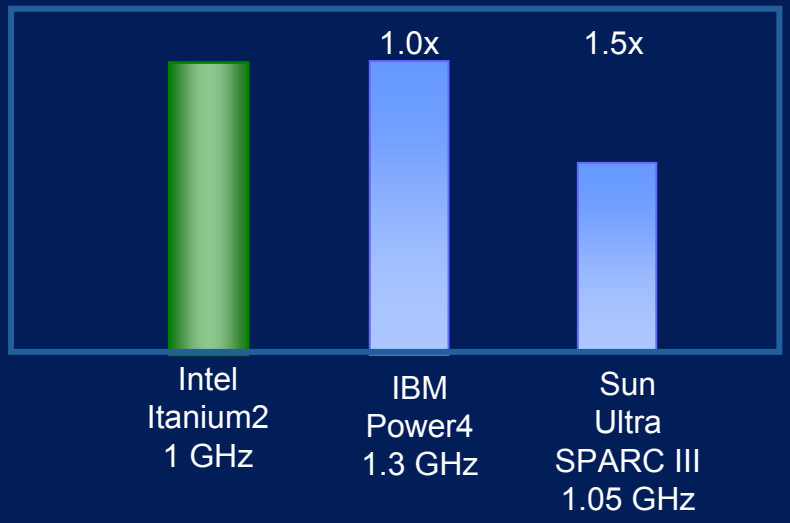
The 2-way rx2600 beats the competition on SSL encryption/decryption performance



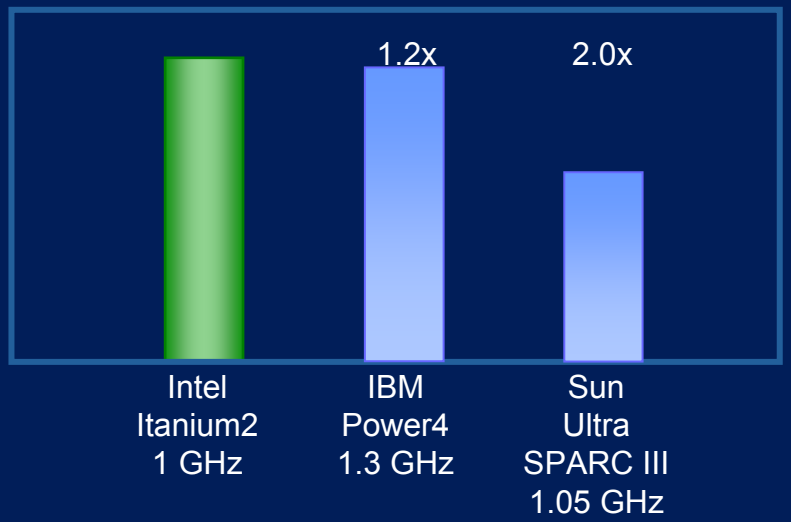
Itanium 2 architecture advantages

- **incredible computing performance**
- world's fastest floating point engine!
- already matches/outperforms all established server architectures on integer performance…at fewer GHz

integer performance
SPECint_base2000



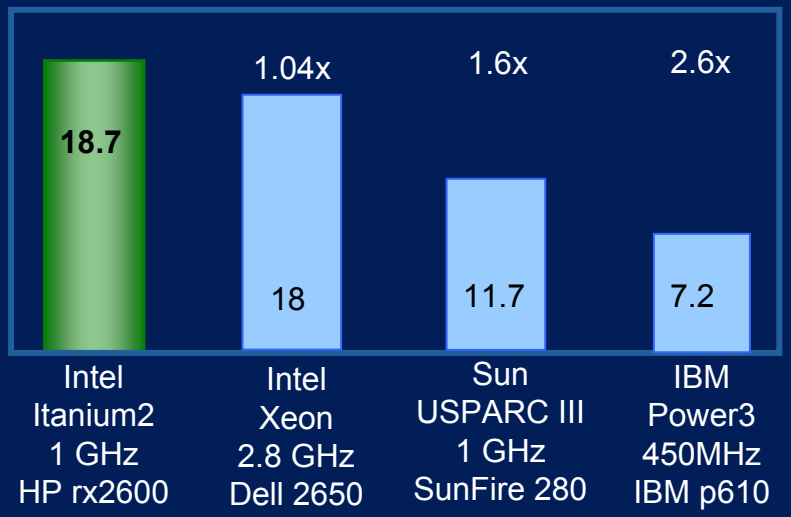
floating point performance
SPECfp_base2000



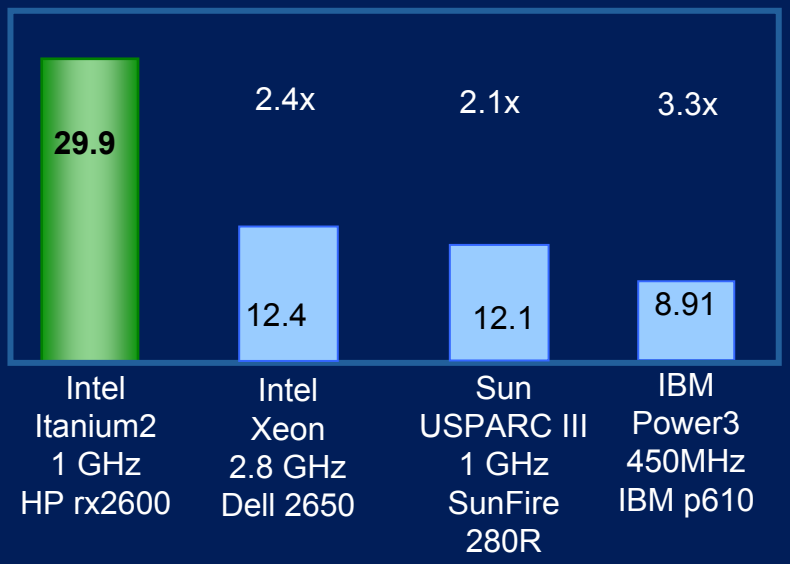
Itanium 2 architecture advantages for 2-way computing power

- **incredible computing performance**
- world's fastest floating point engine!
- already matches/outperforms all established server architectures on integer performance…at fewer GHz

2-way integer performance
SPECint_2000 rate (base)



2-way floating point performance
SPECfp_2000 rate (base)



HP Integrity - 900Mhz rx5670 benchmarks

Itanium 2 “McKinley” 900MHz results

Benchmark	*HP Result with 900MHz Itanium 2*	*Rank*
SPECint_base **1 CPU @ 900Mhz**	**HP rx5670** **673 HP-UX**	**#5** **4-way**
SPECint_rate **4 CPUs @ 900MHz**	**HP rx5670** **30.4 HP-UX**	**#4** **4-way**
SPECfp_base **1 CPU @ 900MHz**	**HP rx5670** **1,151 Linux**	**#4** **4-way**
SPECfp_rate_base **4 CPUs @ 900Mhz**	**HP rx5670** **38.7 Linux**	**#3** **4-way**

rx5670 tested with 900MHz Itanium 2 processors

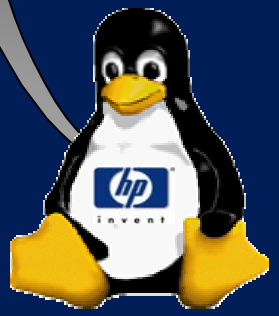
Beispiele aus der Praxis

XC: hp HPTC strengths combined

AlphaServer SC experience

highly scalable
fast interconnects
scalable SSI features
shared-distributed filesystems
experience delivering multi-TFLOPS systems

hp rx2600



Linux leadership

scalable Linux technologies

Linux based supercomputer

U.S. Department of Energy's
Pacific Northwest National Laboratory

Powerful Computing

HP to provide U.S. Department of Energy one of the world's fastest supercomputers

Hewlett-Packard has announced that the U.S. Department of Energy's Pacific Northwest National Laboratory (PNNL) has ordered a $24.5 million (US) HP super-computer that will allow researchers to apply computational science to address key scientific challenges. Once fully operational in early 2003, the supercomputer will be one of the fastest and most powerful Linux-based super-computers in the world.

Consisting of **1,400** of the next generation of **Intel Itanium Family Processors**, the new HP supercomputer will have an expected total peak performance of more than **8.3 teraflops** — roughly 8,300 times faster than a current personal computer. Calculations that currently take a month to complete could be done in one day on the new

Linux based supercomputer

Rice University's Computer and Information Technology Institute (CITI)

Fastest Supercomputer

HP to help Rice University build terascale cluster

HP and Rice University's Computer and Information Technology Institute (CITI) will build Texas' fastes academic supercomputer, the Rice Terascale Cluste (RTC). Scheduled to come online early next year, RTC wi be built based on HP's Intel Itanium 2-based workstations and servers. RTC is expected to be the first computer at a Texas university with a peak performance of **1 teraflops** More than 30 researchers from fields as diverse as biochemistry, political science, physics and computationa engineering have already booked time on RTC.

- 132 HP Workstations zx6000
- 4 HP Servers rx5670
- Red Hat Linux AW and AS
- Myricom Myrinet high-speed interconnect
- HP VA7400 disk array
- HP DS2405 storage devices.

BP

Ölkonzern BP installiert Itanium-2-Cluster unter Linux

Der britische Mineralölkonzern BP nutzt in seinem Forschungszentrum für seismische Daten ein Hochleistungs-Cluster aus Itanium-2-basierenden Rechnern unter dem Open-Source-Betriebssystem Linux. Nach Angaben von Intel besteht der Verbund aus 259 Systemen vom Typ HP rx5670 mit insgesamt mehr als 1000 Prozessoren. Die maximale Rechenleistung liegt bei vier Teraflops; dabei stünden rund 8000 GB Speicher zur Verfügung. Mit Hilfe des Intel-Clusters ist die in Houston, Texas, beheimatete Forschungseinrichtung in der Lage, seismische Daten für die Erdöl- und Erdgassuche effizienter auszuwerten und das damit verbundene finanzielle Risiko zu reduzieren.

Polizei Niedersachsen

NIVADIS

Niedersächsische **V**organgsbearbeitungs-, **A**nalyse-, **D**okumentations- und **I**nformations-**S**ystem

Das System kombiniert Vorgangsbearbeitung, Recherche, Fahndung und Analyse, löst damit 23 alte Einzelanwendungen ab und steigert die Effizienz der Polizeiarbeit.

27 HP Itanium-Server rx2600 für BEA und Oracle

http://www.presseportal.de/story.htx?nr=482161

invention
made real

welcome to
hp's itanium
computing

- Am Itanium geht kein Weg vorbei.
- HP ist Mitentwickler des Itaniums.
- HPs Server bieten erstklassige Leistu


hp
invent